



## SEQUENCE LISTING

<110> Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo  
ARIYASU, Toshio  
MATSUMOTO, Shuji  
KYONO, Fumiyo  
HANAYA, Toshiharu  
ARAI, Shigeyuki  
IKEDA, Masao  
KURIMOTO, Masashi

<120> TREHALOSE RECEPTOR AND METHOD FOR DETECTING TREHALOSE WITH THE  
SAME

<130> ARIYASU2

<140> 10/663,650

<141> 2003-09-17

<160> 24

<170> PatentIn version 3.3

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Gly Pro Gly Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile  
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Ile His Gly Val Gly Tyr Ser Glu Glu Asp Arg Arg Ala Phe Arg Leu  
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Leu Ile Tyr Gln Asn Ile Phe Val Ser Met Gln Ala Met Ile Asp Ala  
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Met Asp Arg Leu Gln Ile Pro Phe Ser Arg Pro Asp Ser Lys Gln His  
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Ala Ser Leu Val Met Thr Gln Asp Pro Tyr Lys Val Ser Thr Phe Glu  
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Lys Pro Tyr Ala Val Ala Met Gln Tyr Leu Trp Arg Asp Ala Gly Ile  
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Arg Ala Cys Tyr Glu Arg Arg Arg Glu Phe His Leu Leu Asp Ser Ala  
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Val Tyr Tyr Leu Ser His Leu Glu Arg Ile Ser Glu Asp Ser Tyr Ile  
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Pro Thr Ala Gln Asp Val Leu Arg Ser Arg Met Pro Thr Thr Gly Ile  
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Asn Glu Tyr Cys Phe Ser Val Lys Lys Thr Lys Leu Arg Ile Val Asp  
 195 200 205

Val Gly Gly Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu  
 210 215 220

Asn Val Ile Ala Leu Ile Tyr Leu Ala Ser Leu Ser Glu Tyr Asp Gln  
 225 230 235 240

Cys Leu Glu Glu Asn Asp Gln Glu Asn Arg Met Glu Glu Ser Leu Ala  
 245 250 255

Leu Phe Ser Thr Ile Leu Glu Leu Pro Trp Phe Lys Ser Thr Ser Val  
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Ile Leu Phe Leu Asn Lys Thr Asp Ile Leu Glu Asp Lys Ile His Thr  
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Ser His Leu Ala Thr Tyr Phe Pro Ser Phe Gln Gly Pro Arg Arg Asp  
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Ala Glu Ala Ala Lys Ser Phe Ile Leu Asp Met Tyr Ala Arg Val Tyr  
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Ala Ser Cys Ala Glu Pro Gln Asp Gly Gly Arg Lys Gly Ser Arg Ala

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Ala Ser Leu Val Met Ser Gln Asp Pro Tyr Lys Val Thr Thr Phe Glu
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Val Tyr Tyr Leu Ser His Leu Glu Arg Ile Thr Glu Glu Gly Tyr Val  
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Pro Thr Ala Gln Asp Val Leu Arg Ser Arg Met Pro Thr Thr Gly Ile  
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Val Gly Gly Gln Lys Ser Glu Arg Lys Lys Trp Ile His Cys Phe Glu  
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Ala Glu Ala Ala Lys Arg Phe Ile Leu Asp Met Tyr Thr Arg Met Tyr  
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Ile Val Lys Gln Met Lys Ile Ile His Ser Gly Gly Phe Asn Leu Glu  
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Ala Cys Lys Glu Tyr Lys Pro Leu Ile Ile Tyr Asn Ala Ile Asp Ser  
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Leu Thr Arg Ile Ile Arg Ala Leu Ala Ala Leu Arg Ile Asp Phe His  
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Asn Pro Asp Arg Ala Tyr Asp Ala Val Gln Leu Phe Ala Leu Thr Gly  
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Pro Ala Glu Ser Lys Gly Glu Ile Thr Pro Glu Leu Leu Gly Val Met  
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Arg Arg Leu Trp Ala Asp Pro Gly Ala Gln Ala Cys Phe Ser Arg Ser  
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Ser Glu Tyr His Leu Glu Asp Asn Ala Ala Tyr Tyr Leu Asn Asp Leu  
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Glu Arg Ile Ala Ala Ala Asp Tyr Ile Pro Thr Val Glu Asp Ile Leu  
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Arg Ser Arg Asp Met Thr Thr Gly Ile Val Glu Asn Lys Phe Thr Phe  
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Lys Glu Leu Thr Phe Lys Met Val Asp Val Gly Gly Gln Arg Ser Glu  
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Arg Lys Lys Trp Ile His Cys Phe Glu Gly Val Thr Ala Ile Ile Phe  
210 215 220

Cys Val Glu Leu Ser Gly Tyr Asp Leu Lys Leu Tyr Glu Asp Asn Gln  
225 230 235 240

Thr Ser Arg Met Ala Glu Ser Leu Arg Leu Phe Asp Ser Ile Cys Asn  
245 250 255

Asn Asn Trp Phe Ile Asn Thr Ser Leu Ile Leu Phe Leu Asn Lys Lys  
260 265 270

Asp Leu Leu Ala Glu Lys Ile Arg Arg Ile Pro Leu Thr Ile Cys Phe  
275 280 285

Pro Glu Tyr Lys Gly Gln Asn Thr Tyr Glu Glu Ala Ala Val Tyr Ile  
290 295 300

Gln Arg Gln Phe Glu Asp Leu Asn Arg Asn Lys Glu Thr Lys Glu Ile  
305 310 315 320

Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Ser Asn Ile Gln Phe Val  
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 <301> SEJAL M. MODY, MAURICE K. C. HO, SUSHMA A. JOSHI, and YUNG H. WONG  
 <302> Incorporation of GalphaZ-Specific Sequence at the Carboxyl Terminus Increases the Promiscuity of Galpha16 toward Gi-Coupled Receptors  
 <303> The American Society for Pharmacology and Experimental Therapeutics  
 <304> 57  
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Gly Pro Gly Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile  
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Ile His Gly Ala Gly Tyr Ser Glu Glu Glu Arg Lys Gly Phe Arg Pro  
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Leu Val Tyr Gln Asn Ile Phe Val Ser Met Arg Ala Met Ile Glu Ala  
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Met Glu Arg Leu Gln Ile Pro Phe Ser Arg Pro Glu Ser Lys His His  
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Ala Ser Leu Val Met Ser Gln Asp Pro Tyr Lys Val Thr Thr Phe Glu  
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Lys Arg Tyr Ala Ala Ala Met Gln Trp Leu Trp Arg Asp Ala Gly Ile  
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Arg Ala Cys Tyr Glu Arg Arg Arg Glu Phe His Leu Leu Asp Ser Ala  
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Val Tyr Tyr Leu Ser His Leu Glu Arg Ile Thr Glu Glu Gly Tyr Val

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Pro Thr Ala Gln Asp Val Leu Arg Ser Arg Met Pro Thr Thr Gly Ile		
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Val Gly Gly Gln Lys Ser Glu Arg Lys Lys Trp Ile His Cys Phe Glu		
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Cys Leu Glu Glu Asn Asn Gln Glu Asn Arg Met Lys Glu Ser Leu Ala		
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Leu Phe Gly Thr Ile Leu Glu Leu Pro Trp Phe Lys Ser Thr Ser Val		
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Gly Asp Tyr Ile Leu Gly Gly Leu Phe Pro Leu Gly Ser Thr Glu Glu  
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Ala Thr Leu Asn Gln Arg Thr Gln Pro Asn Ser Ile Pro Cys Asn Arg  
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Phe Ser Pro Leu Gly Leu Phe Leu Ala Met Ala Met Lys Met Ala Val  
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Glu Glu Ile Asn Asn Gly Ser Ala Leu Leu Pro Gly Leu Arg Leu Gly  
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Tyr Asp Leu Phe Asp Thr Cys Ser Glu Pro Val Val Thr Met Lys Ser  
100 105 110

Ser Leu Met Phe Leu Ala Lys Val Gly Ser Gln Ser Ile Ala Ala Tyr  
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Cys Asn Tyr Thr Gln Tyr Gln Pro Arg Val Leu Ala Val Ile Gly Pro  
130 135 140

His Ser Ser Glu Leu Ala Leu Ile Thr Gly Lys Phe Phe Ser Phe Phe  
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Leu Met Pro Gln Val Ser Tyr Ser Ala Ser Met Asp Arg Leu Ser Asp  
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Arg Glu Thr Phe Pro Ser Phe Phe Arg Thr Val Pro Ser Asp Arg Val  
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Gln Leu Gln Ala Val Val Thr Leu Leu Gln Asn Phe Ser Trp Asn Trp  
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Val Ala Ala Leu Gly Ser Asp Asp Asp Tyr Gly Arg Glu Gly Leu Ser  
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Ile Phe Ser Ser Leu Ala Asn Ala Arg Gly Ile Cys Ile Ala His Glu  
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Gly Leu Val Pro Gln His Asp Thr Ser Gly Gln Gln Leu Gly Lys Val  
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Leu Asp Val Leu Arg Gln Val Asn Gln Ser Lys Val Gln Val Val Val  
 260 265 270

Leu Phe Ala Ser Ala Arg Ala Val Tyr Ser Leu Phe Ser Tyr Ser Ile  
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His His Gly Leu Ser Pro Lys Val Trp Val Ala Ser Glu Ser Trp Leu  
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Thr Ser Asp Leu Val Met Thr Leu Pro Asn Ile Ala Arg Val Gly Thr  
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Val Leu Gly Phe Leu Gln Arg Gly Ala Leu Leu Pro Glu Phe Ser His  
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Tyr Val Glu Thr His Leu Ala Leu Ala Ala Asp Pro Ala Phe Cys Ala  
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Ser Leu Asn Ala Glu Leu Asp Leu Glu Glu His Val Met Gly Gln Arg  
 355 360 365

Cys Pro Arg Cys Asp Asp Ile Met Leu Gln Asn Leu Ser Ser Gly Leu  
 370 375 380

Leu Gln Asn Leu Ser Ala Gly Gln Leu His His Gln Ile Phe Ala Thr  
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Tyr Ala Ala Val Tyr Ser Val Ala Gln Ala Leu His Asn Thr Leu Gln  
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Cys Asn Val Ser His Cys His Val Ser Glu His Val Leu Pro Trp Gln  
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Leu Leu Glu Asn Met Tyr Asn Met Ser Phe His Ala Arg Asp Leu Thr  
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Leu Gln Phe Asp Ala Glu Gly Asn Val Asp Met Glu Tyr Asp Leu Lys  
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Met Trp Val Trp Gln Ser Pro Thr Pro Val Leu His Thr Val Gly Thr  
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Phe Asn Gly Thr Leu Gln Leu Gln Gln Ser Lys Met Tyr Trp Pro Gly  
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Val Arg Arg Val Lys Gly Phe His Ser Cys Cys Tyr Asp Cys Val Asp  
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Gly Leu Ser Val His His Trp Asp Ser Pro Leu Val Gln Ala Ser Gly  
 595 600 605

Gly Ser Gln Phe Cys Phe Gly Leu Ile Cys Leu Gly Leu Phe Cys Leu  
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Ser Val Leu Leu Phe Pro Gly Arg Pro Ser Ser Ala Ser Cys Leu Ala  
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Gln Gln Pro Met Ala His Leu Pro Leu Thr Gly Cys Leu Ser Thr Leu  
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Phe Leu Gln Ala Ala Glu Thr Phe Val Glu Ser Glu Leu Pro Leu Ser  
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Trp Ala Asn Trp Leu Cys Ser Tyr Leu Arg Gly Leu Trp Ala Trp Leu  
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Val Val Leu Leu Ala Thr Phe Val Glu Ala Ala Leu Cys Ala Trp Tyr  
690 695 700

Leu Asn Ala Phe Pro Pro Glu Val Val Thr Asp Trp Ser Val Leu Pro  
705 710 715 720

Thr Glu Val Leu Glu His Cys His Val Arg Ser Trp Val Ser Leu Gly  
725 730 735

Leu Val His Ile Thr Asn Ala Met Leu Ala Phe Leu Cys Phe Leu Gly  
740 745 750

Thr Phe Leu Val Gln Ser Gln Pro Gly Arg Tyr Asn Arg Ala Arg Gly  
755 760 765

Leu Thr Phe Ala Met Leu Ala Tyr Phe Ile Thr Trp Val Ser Phe Val  
770 775 780

Pro Leu Leu Ala Asn Val Gln Val Ala Tyr Gln Pro Ala Val Gln Met  
785 790 795 800

Gly Ala Ile Leu Val Cys Ala Leu Gly Ile Leu Val Thr Phe His Leu  
805 810 815

Pro Lys Cys Tyr Val Leu Leu Trp Leu Pro Lys Leu Asn Thr Gln Glu  
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Leu Thr Trp Gly Cys Cys Pro Trp Cys Leu Thr Glu Glu Glu Lys Thr
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gcc gcc aga atc gac cag gag atc aac agg att ttg ttg gaa cag aaa      150
Ala Ala Arg Ile Asp Gln Glu Ile Asn Arg Ile Leu Leu Glu Gln Lys
25                               30                               35

aaa caa gag cgc gag gaa ttg aaa ctc ctg ctg ttg ggg cct ggt gag      198
Lys Gln Glu Arg Glu Glu Leu Lys Leu Leu Leu Leu Gly Pro Gly Glu
40                               45                               50

agc ggg aag agt acg ttc atc aag cag atg cgc atc att cac ggt gtg      246
Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly Val
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ggc tac tcg gag gag gac cgc aga gcc ttc cgg ctg ctc atc tac cag      294
Gly Tyr Ser Glu Glu Asp Arg Arg Ala Phe Arg Leu Leu Ile Tyr Gln
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aac atc ttc gtc tcc atg cag gcc atg ata gat gcg atg gac cgg ctg      342
Asn Ile Phe Val Ser Met Gln Ala Met Ile Asp Ala Met Asp Arg Leu
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cag atc ccc ttc agc agg cct gac agc aag cag cac gcc agc cta gtg      390
Gln Ile Pro Phe Ser Arg Pro Asp Ser Lys Gln His Ala Ser Leu Val
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atg acc cag gac ccc tat aaa gtg agc aca ttc gag aag cca tat gca      438
Met Thr Gln Asp Pro Tyr Lys Val Ser Thr Phe Glu Lys Pro Tyr Ala
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gtg gcc atg cag tac ctg tgg cgg gac gcg ggc atc cgt gca tgc tac      486
Val Ala Met Gln Tyr Leu Trp Arg Asp Ala Gly Ile Arg Ala Cys Tyr
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gag cga agg cgt gaa ttc cac ctt ctg gac tcc gcg gtg tat tac ctg      534
Glu Arg Arg Arg Glu Phe His Leu Leu Asp Ser Ala Val Tyr Tyr Leu
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Ser His Leu Glu Arg Ile Ser Glu Asp Ser Tyr Ile Pro Thr Ala Gln
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gac gtg ctg cgc agt cgc atg ccc acc aca ggc atc aat gag tac tgc      630
Asp Val Leu Arg Ser Arg Met Pro Thr Thr Gly Ile Asn Glu Tyr Cys
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Phe Ser Val Lys Lys Thr Lys Leu Arg Ile Val Asp Val Gly Gly Gln
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Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Ile Ala	
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ctc atc tac ctg gcc tcc ctg agc gag tat gac cag tgc cta gag gag	774
Leu Ile Tyr Leu Ala Ser Leu Ser Glu Tyr Asp Gln Cys Leu Glu Glu	
230 235 240	
aac gat cag gag aac cgc atg gag gag agt ctc gct ctg ttc agc acg	822
Asn Asp Gln Glu Asn Arg Met Glu Glu Ser Leu Ala Leu Phe Ser Thr	
245 250 255 260	
atc cta gag ctg ccc tgg ttc aag agc acc tcg gtc atc ctc ttc ctc	870
Ile Leu Glu Leu Pro Trp Phe Lys Ser Thr Ser Val Ile Leu Phe Leu	
265 270 275	
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Asn Lys Thr Asp Ile Leu Glu Asp Lys Ile His Thr Ser His Leu Ala	
280 285 290	
aca tac ttc ccc agc ttc cag gga ccc cgg cga gac gca gag gcc gcc	966
Thr Tyr Phe Pro Ser Phe Gln Gly Pro Arg Arg Asp Ala Glu Ala Ala	
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Lys Ser Phe Ile Leu Asp Met Tyr Ala Arg Val Tyr Ala Ser Cys Ala	
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Glu Pro Gln Asp Gly Arg Lys Gly Ser Arg Ala Arg Arg Phe Phe	
325 330 335 340	
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Ala His Phe Thr Cys Ala Thr Asp Thr Gln Ser Val Arg Ser Val Phe	
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aag gac gtg cgg gac tcg gtg ctg gcc cgg tac ctg gac gag atc aac	1158
Lys Asp Val Arg Asp Ser Val Leu Ala Arg Tyr Leu Asp Glu Ile Asn	
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Leu Leu	
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ggggcgatgc cacccggtgc cgactgaggc caccgcacc atg gcc cgc tcg ctg 234
Met Ala Arg Ser Leu
1 5
acc tgg cgc tgc tgc ccc tgg tgc ctg acg gag gat gag aag gcc gcc 282
Thr Trp Arg Cys Cys Pro Trp Cys Leu Thr Glu Asp Glu Lys Ala Ala
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gcc cgg gtg gac cag gag atc aac agg atc ctc ttg gag cag aag aag 330
Ala Arg Val Asp Gln Glu Ile Asn Arg Ile Leu Leu Glu Gln Lys Lys
25 30 35
cag gac cgc ggg gag ctg aag ctg ctg ctt ttg ggc cca ggc gag agc 378
Gln Asp Arg Gly Glu Leu Lys Leu Leu Leu Leu Gly Pro Gly Glu Ser
40 45 50
ggg aag agc acc ttc atc aag cag atg cgg atc atc cac ggc gcc ggc 426
Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly Ala Gly
55 60 65

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tac tgc gag gag gag cgc aag ggc ttc cgg ccc ctg gtc tac cag aac	474
Tyr Ser Glu Glu Glu Arg Lys Gly Phe Arg Pro Leu Val Tyr Gln Asn	
70 75 80 85	
atc ttc gtg tcc atg cgg gcc atg atc gag gcc atg gag cgg ctg cag	522
Ile Phe Val Ser Met Arg Ala Met Ile Glu Ala Met Glu Arg Leu Gln	
90 95 100	
att cca ttc agc agg ccc gag agc aag cac cac gct agc ctg gtc atg	570
Ile Pro Phe Ser Arg Pro Glu Ser Lys His His Ala Ser Leu Val Met	
105 110 115	
agc cag gac ccc tat aaa gtg acc acg ttt gag aag cgc tac gct gcg	618
Ser Gln Asp Pro Tyr Lys Val Thr Thr Phe Glu Lys Arg Tyr Ala Ala	
120 125 130	
gcc atg cag tgg ctg tgg agg gat gcc ggc atc cgg gcc tgc tat gag	666
Ala Met Gln Trp Leu Trp Arg Asp Ala Gly Ile Arg Ala Cys Tyr Glu	
135 140 145	
cgt cgg cgg gaa ttc cac ctg ctc gat tca gcc gtg tac tac ctg tcc	714
Arg Arg Arg Glu Phe His Leu Leu Asp Ser Ala Val Tyr Tyr Leu Ser	
150 155 160 165	
cac ctg gag cgc atc acc gag gag ggc tac gtc ccc aca gct cag gac	762
His Leu Glu Arg Ile Thr Glu Glu Gly Tyr Val Pro Thr Ala Gln Asp	
170 175 180	
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Val Leu Arg Ser Arg Met Pro Thr Thr Gly Ile Asn Glu Tyr Cys Phe	
185 190 195	
tcc gtg cag aaa acc aac ctg cgg atc gtg gac gtc ggg ggc cag aag	858
Ser Val Gln Lys Thr Asn Leu Arg Ile Val Asp Val Gly Gly Gln Lys	
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tca gag cgt aag aaa tgg atc cat tgt ttc gag aac gtg atc gcc ctc	906
Ser Glu Arg Lys Lys Trp Ile His Cys Phe Glu Asn Val Ile Ala Leu	
215 220 225	
atc tac ctg gcc tca ctg agt gaa tac gac cag tgc ctg gag gag aac	954
Ile Tyr Leu Ala Ser Leu Ser Glu Tyr Asp Gln Cys Leu Glu Glu Asn	
230 235 240 245	
aac cag gag aac cgc atg aag gag agc ctc gca ttg ttt ggg act atc	1002
Asn Gln Glu Asn Arg Met Lys Glu Ser Leu Ala Leu Phe Gly Thr Ile	
250 255 260	
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Thr Val Leu Gly Val Ala Ile Gln Gln Arg Gln Val Pro Gly Leu Lys	
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Glu Phe Glu Glu Ser Tyr Val Gln Ala Val Met Gly Ala Pro Arg Thr	
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Cys Pro Glu Gly Ser Trp Cys Gly Thr Asn Gln Leu Cys Arg Glu Cys	
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His Ala Phe Thr Thr Trp Asn Met Pro Glu Leu Gly Ala Phe Ser Met	
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Ser Ala Ala Tyr Asn Val Tyr Glu Ala Val Tyr Ala Val Ala His Gly	
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Leu His Gln Leu Leu Gly Cys Thr Ser Gly Thr Cys Ala Arg Gly Pro	
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Val Tyr Pro Trp Gln Leu Leu Gln Gln Ile Tyr Lys Val Asn Phe Leu	
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Leu His Lys Lys Thr Val Ala Phe Asp Asp Lys Gly Asp Pro Leu Gly	
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Tyr Tyr Asp Ile Ile Ala Trp Asp Trp Asn Gly Pro Glu Trp Thr Phe	
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Glu Val Ile Gly Ser Ala Ser Leu Ser Pro Val His Leu Asp Ile Asn	
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Lys Thr Lys Ile Gln Trp His Gly Lys Asn Asn Gln Val Pro Val Ser	
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Val Cys Thr Arg Asp Cys Leu Glu Gly His His Arg Leu Val Met Gly	

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Cys	Thr	Glu	Val	Asn	Ser	Val	Gly	Phe	Leu	Val	Ala	Phe	Ala	His	Asn			
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Leu His Phe Val Ser Trp Ile Ala Phe Phe Thr Met Ser Ser Ile Tyr	
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Gln Gly Ser Tyr Leu Pro Ala Val Asn Val Leu Ala Gly Leu Ala Thr	
785 790 795 800	
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Leu Cys Arg Pro Glu Leu Asn Asn Thr Glu His Phe Gln Ala Ser Ile	
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Ala Leu Pro Lys Pro Val Met Leu Val Gly Asn Ser Asp Phe His Leu	
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Ala Gly Asp Tyr Leu Leu Gly Gly Leu Phe Thr Leu His Ala Asn Val	
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Lys Ser Val Ser His Leu Ser Tyr Leu Gln Val Pro Lys Cys Asn Glu	

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Tyr Asn Met Lys Val Leu Gly Tyr Asn Leu Met Gln Ala Met Arg Phe			
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gcc gtg gag gaa atc aac aac tgt agc tct ttg ctg ccc ggc gtg ctg			288
Ala Val Glu Glu Ile Asn Asn Cys Ser Ser Leu Leu Pro Gly Val Leu			
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ctc ggc tac gag atg gtg gat gtc tgc tac ctc tcc aac aat atc cag			336
Leu Gly Tyr Glu Met Val Asp Val Cys Tyr Leu Ser Asn Asn Ile Gln			
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cct ggg ctc tac ttc ctg tca cag ata gat gac ttc ctg ccc atc ctc			384
Pro Gly Leu Tyr Phe Leu Ser Gln Ile Asp Asp Phe Leu Pro Ile Leu			
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aaa gac tac agc cag tac agg ccc caa gtg gtg gct gtt att ggc cca			432
Lys Asp Tyr Ser Gln Tyr Arg Pro Gln Val Val Ala Val Ile Gly Pro			
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gac aac tct gag tct gcc atc acc gtg tcc aac att ctc tcc tac ttc			480
Asp Asn Ser Glu Ser Ala Ile Thr Val Ser Asn Ile Leu Ser Tyr Phe			
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Leu Val Pro Gln Val Thr Tyr Ser Ala Ile Thr Asp Lys Leu Gln Asp			
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Lys Arg Arg Phe Pro Ala Met Leu Arg Thr Val Pro Ser Ala Thr His			
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His Ile Glu Ala Met Val Gln Leu Met Val His Phe Gln Trp Asn Trp			
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Ile Val Val Leu Val Ser Asp Asp Asp Tyr Gly Arg Glu Asn Ser His			
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Gln Glu Val Leu Pro Val Pro Glu Pro Asn Gln Ala Val Arg Pro Glu			
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Glu Gln Asp Gln Leu Asp Asn Ile Leu Asp Lys Leu Arg Arg Thr Ser			
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Ala Arg Val Val Val Ile Phe Ser Pro Glu Leu Ser Leu His Asn Phe			
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Phe Arg Glu Val Leu Arg Trp Asn Phe Thr Gly Phe Val Trp Ile Ala	
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Ser Glu Ser Trp Ala Ile Asp Pro Val Leu His Asn Leu Thr Glu Leu	
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His Thr Leu His Arg Leu Leu His Cys Asn Gln Val Arg Cys Thr Lys	
405 410 415	
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Gln Ile Val Tyr Pro Trp Gln Leu Leu Arg Glu Ile Trp His Val Asn	
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Pro Met Leu Leu Asp Ile Ile Gln Trp Gln Trp Gly Leu Ser Gln Asn	
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Pro Phe Gln Ser Ile Ala Ser Tyr Ser Pro Thr Glu Thr Arg Leu Thr	
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Tyr Ile Ser Asn Val Ser Trp Tyr Thr Pro Asn Asn Thr Val Pro Ile	
485 490 495	
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Ser Met Cys Ser Lys Ser Cys Gln Pro Gly Gln Met Lys Lys Pro Ile	
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Tyr Leu Asn Arg Ser Val Asp	Glu Phe Asn Cys Leu Ser Cys Pro Gly		
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Ser Met Asp Leu Leu Leu Ser Val Leu Gly Phe Ser Phe Ala Tyr Val			
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Ser Val His Asp Gly Val Leu Val Thr Ile Met Asp Leu Leu Val Thr	
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Leu Gly Met Gly Ala Ser Leu Cys Leu Ser Gln Gln Phe Lys Ala Gln	
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Gly Asp Tyr Ile Leu Gly Gly Leu Phe Pro Leu Gly Ser Thr Glu Glu	
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Ala Thr Leu Asn Gln Arg Thr Gln Pro Asn Ser Ile Pro Cys Asn Arg	
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Phe Ser Pro Leu Gly Leu Phe Leu Ala Met Ala Met Lys Met Ala Val	
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Glu Glu Ile Asn Asn Gly Ser Ala Leu Leu Pro Gly Leu Arg Leu Gly	

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tgc	aac	tac	aca	cag	tac	caa	ccc	cgt	gtg	ctg	gct	gtc	atc	ggc	ccc	432				
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cat	cat	ggc	ctc	tca	ccc	aag	gta	tgg	gtg	gcc	agt	gag	tct	tgg	ctg	912				
His	His	Gly	Leu	Ser	Pro	Lys	Val	Trp	Val	Ala	Ser	Glu	Ser	Trp	Leu					
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Thr	Ser	Asp	Leu	Val	Met	Thr	Leu	Pro	Asn	Ile	Ala	Arg	Val	Gly	Thr					
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gtg ctt ggg ttt ttg cag cgg ggt gcc cta ctg cct gaa ttt tcc cat	1008
Val Leu Gly Phe Leu Gln Arg Gly Ala Leu Leu Pro Glu Phe Ser His	
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tat gtg gag act cac ctt gcc ctg gcc gct gac cca gca ttc tgt gcc	1056
Tyr Val Glu Thr His Leu Ala Leu Ala Ala Asp Pro Ala Phe Cys Ala	
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Ser Leu Asn Ala Glu Leu Asp Leu Glu Glu His Val Met Gly Gln Arg	
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Cys Pro Arg Cys Asp Asp Ile Met Leu Gln Asn Leu Ser Ser Gly Leu	
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Leu Gln Asn Leu Ser Ala Gly Gln Leu His His Gln Ile Phe Ala Thr	
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tat gca gct gtg tac agt gtg gct caa gcc ctt cac aac acc cta cag	1248
Tyr Ala Ala Val Tyr Ser Val Ala Gln Ala Leu His Asn Thr Leu Gln	
405 410 415	
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Cys Asn Val Ser His Cys His Val Ser Glu His Val Leu Pro Trp Gln	
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Leu Leu Glu Asn Met Tyr Asn Met Ser Phe His Ala Arg Asp Leu Thr	
435 440 445	
cta cag ttt gat gct gaa ggg aat gta gac atg gaa tat gac ctg aag	1392
Leu Gln Phe Asp Ala Glu Gly Asn Val Asp Met Glu Tyr Asp Leu Lys	
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Met Trp Val Trp Gln Ser Pro Thr Pro Val Leu His Thr Val Gly Thr	
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Phe Asn Gly Thr Leu Gln Leu Gln Gln Ser Lys Met Tyr Trp Pro Gly	
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Asn Gln Val Pro Val Ser Gln Cys Ser Arg Gln Cys Lys Asp Gly Gln	
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Val Arg Arg Val Lys Gly Phe His Ser Cys Cys Tyr Asp Cys Val Asp	
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Cys Lys Ala Gly Ser Tyr Arg Lys His Pro Asp Asp Phe Thr Cys Thr	
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Pro Cys Asn Gln Asp Gln Trp Ser Pro Glu Lys Ser Thr Ala Cys Leu	

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565	570	575		
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580	585	590		
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625	630	635	640	
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645	650	655		
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690	695	700		
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705	710	715	720	
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725	730	735		
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755	760	765		
ctc acc ttc gcc atg cta gct tat ttc atc acc tgg gtc tct ttt gtg	Leu Thr Phe Ala Met Leu Ala Tyr Phe Ile Thr Trp Val Ser Phe Val	2352		
770	775	780		

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Pro Leu Leu Ala Asn Val Gln Val Ala Tyr Gln Pro Ala Val Gln Met
785              790              795              800

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